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I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

I also certify that by virtue of an assignment registered under the Patents Act 1977, the application is now proceeding in the name as substituted.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

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Signed

*Andrew Gersey*

Dated

3 November 1998

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**GB 9722448.9**

By virtue of a direction given under Section 30 of The Patents Act 1977, the application is proceeding in the name of

AKZO NOBEL UK PLC  
50 George Street  
London  
W1A 2BB

240CT97 E312403-8 D02224  
P01/7700 25.00 - 9722448.9

# Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road  
Newport  
Gwent NP9 1RH

1. Your reference

PA (97-09)/MASS

2. Patent application number

(The Patent Office will fill in this part)

23 OCT 1997

9722448.9

3. Full name, address and postcode of the or of each applicant (underline all surnames)

Courtaulds plc  
50 George Street,  
London W1A 2BB

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

United Kingdom

4. Title of the invention

METHODS OF CONTROLLING HOUSE MITES  
AND BEDMITES

5. Name of your agent (if you have one)

J.Y. & G.W. Johnson

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Kingsbourne House,  
229-231 High Holborn,  
London WC1V 7DP

Patents ADP number (if you know it)

976001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

yes

a) any applicant named in part 3 is not an inventor, or

b) there is an inventor who is not named as an applicant, or

c) any named applicant is a corporate body.

See note (d))

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METHODS OF CONTROLLING HOUSE DUST MITES AND BEDMITES

This invention relates to methods of controlling house dust mites and bedmites (hereinafter HDM). HDM are typically Dermatophagoides spp., one species of particular significance 5 being D. pteronyssinus.

A major food source for HDM is dead skin fragments (dander). Such fragments are continually shed by humans in considerable quantities. HDM proliferate in particular in bedding, including the fillings of pillows and mattresses, and 10 in upholstered articles and fibrous floor coverings. HDM are xerophilic organisms which do not require liquid water, and they live in the absence thereof. They demand a high humidity environment, requiring a relative humidity of about 70 to 80 percent to survive. They absorb little water from the 15 atmosphere and are effectively reliant on their food as the source of water. HDM typically excrete about 20 dung pellets per day. These pellets are very dry and brittle and are about 30 micron in size. They are readily broken up into particles about 1-10 micron in size. In the absence of free moisture, 20 these particles readily acquire a positive static charge and become airborne. They are of respirable size and are accordingly able to enter the bronchial tubes of the human lung, where they become deposited on the mucus layer in the tubes and absorb water. The particles contain toxins, which 25 are released when the particle is hydrated, and they can cause rapid allergic reactions, including bronchial inflammation and asthmatic symptoms. One such allergenic toxin of major importance is Der p I, which is a highly-stable water-soluble glycopeptide of molecular weight 30,000 derived from the 30 digestive system of D. pteronyssinus.

Considerable effort has been expended in devising methods for controlling allergic reactions caused by the presence of HDM. One general method is the topical use of acaricides (the generic name for substances lethal to mites). Other methods

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The polymeric article may be a natural article, for example a cellulosic fibre, into which the chemical compound has been incorporated by, for example, a dyeing process. Alternatively, which may be preferred, the polymeric article 5 may be a manmade article such as a fibre or foam into which the chemical compound has been incorporated by a dyeing process or, more preferably, during the course of its manufacture. In the case of a fibre, such a manmade article may be of a natural polymer such as cellulose or of a 10 synthetic polymer such as an acrylic polymer based on polyacrylonitrile. In the case of a foam, the manmade article may be of a synthetic polymer such as a polyurethane. Fibres are used for the manufacture of textile articles such as bedding fabrics (including sheets, blankets, pillowcases, 15 mattress covers and the like), upholstery fabrics and floor coverings (carpets). Both fibres and foams are used as filling materials in articles such as pillows, mattresses, duvets and cushions, in which dander may accumulate and HDM thrive. Foams are used as backing materials and underlays for carpets.

20 According to the invention there is provided in a second aspect a filling material for an article of bedding or an upholstered article, characterised in that in said filling material is incorporated a chemical compound which exhibits antifungal activity against fungi of the groups Aspergillus 25 glaucus and/or A. restrictus. The filling material is preferably in fibrous form. The invention further provides an article of bedding or an upholstered article filled with such material. The invention further provides a carpeting material which includes a fibre or foam incorporating such a chemical 30 compound.

Insects such as HDM and mammals such as humans on the one hand and fungi such as Aspergillus spp. on the other hand belong to different taxonomic kingdoms. Many substances are known which are toxic to organisms within one kingdom but are 35 effectively non-toxic to organisms within other kingdoms. The same is true, although to increasingly lesser degrees, between

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Trade Mark COURTELLE) were used as control. The antimicrobial activity of the fibres was measured by the parallel streak method disclosed in Example 1 of GB-A-2,309,461, but using a culture of A. repens (IMI 094150) containing ca.  $3 \times 10^6$  5 spores/ml. Test plates were incubated at 25°C for 4 days. The widths of inhibition zones of fungal growth were measured, and the results (overall range and in parenthesis the average of 12 measurements) are reported in the Table below:

10	Table		
	Width of inhibition zone mm		
	Minimum	Maximum	
Control plates	Confluent growth in all	streaks all	on
Fibre with tolnaftate	0-2 (0.7)	2-6 (3.9)	